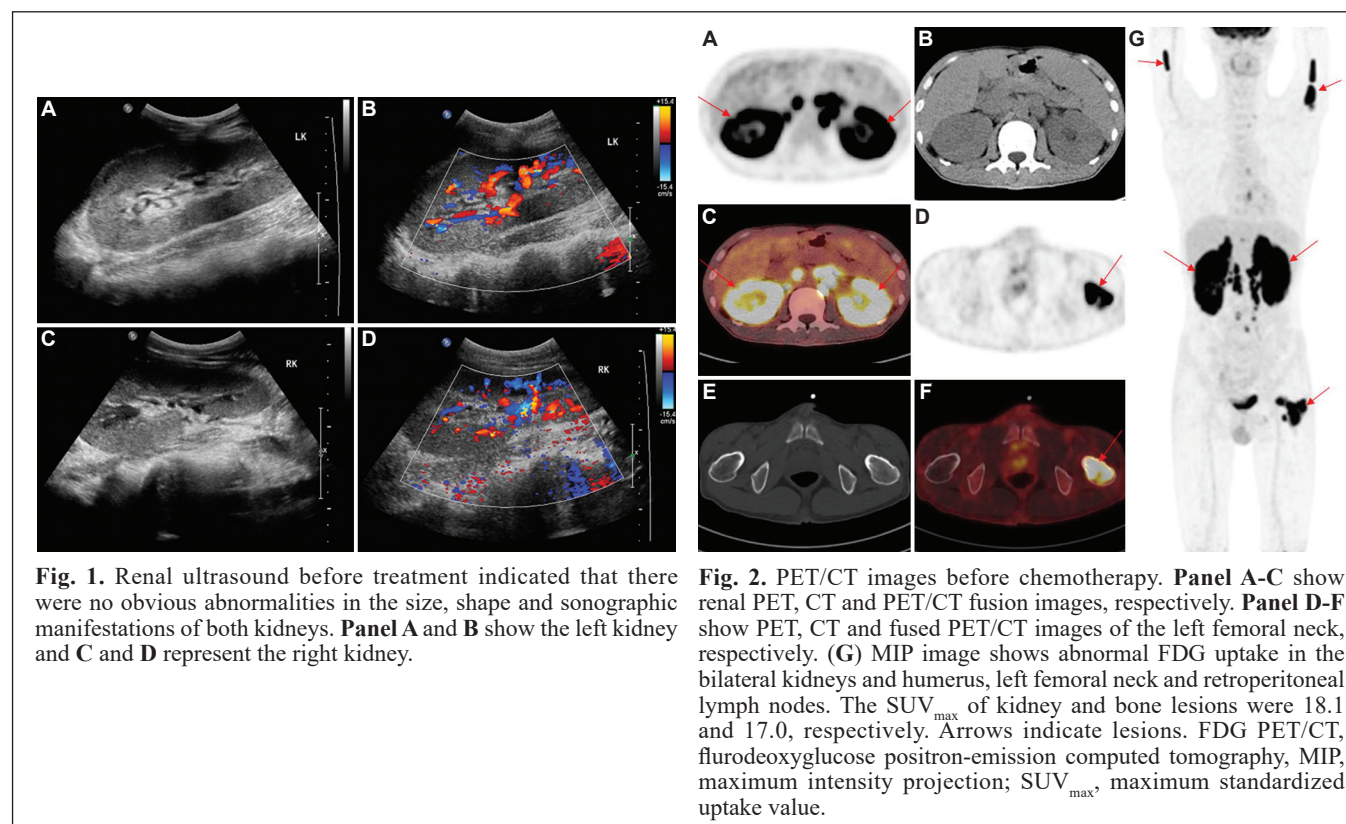




Clinical Image

¹⁸F FDG PET/CT clearly showed a case of lymphoma involving kidneys & bones without morphological abnormality



A 31 yr old male[†] presented to the Infectious Diseases Department of Yichang Central People's Hospital, Hubei province, P.R. China, in June 2017, with a fever of unknown origin for over three weeks. The positive laboratory results mainly included erythrocytopenia ($3.62 \times 10^{12}/l$; normal range: 4.3-5.8), leukopenia ($3.21 \times 10^9/l$; normal range: 3.5-9.5), thrombocytopenia ($118 \times 10^9/l$; normal range: 125-350) and a marked increase in the level of lactate dehydrogenase (1208 IU/l; normal range: 120-250).

However, imaging examinations, including non-enhanced chest and abdominal computed

tomography (CT) and abdominal ultrasound were unremarkable (Fig. 1). A whole-body ¹⁸Fluorine labelled fluorodeoxyglucose positron-emission computed tomography/CT (¹⁸F-FDG PET/CT) was done to look for occult infection or malignancy. PET/CT images (Fig. 2) showed abnormally elevated FDG uptake in bilateral kidneys and humerus, left femoral neck and retroperitoneal lymph nodes (all <1 cm in diameter) with a maximum standardized uptake value (SUV_{max}) of 18.1. No obvious morphological abnormalities were observed in these hypermetabolic lesions on non-enhanced

[†]Consent to publish clinical information and images obtained from the patient.

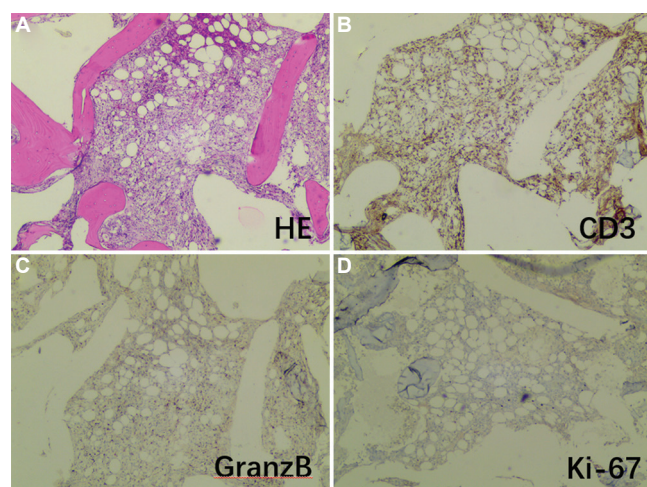


Fig. 3. The left femur neck lesion biopsy under the guidance of PET/CT. (A) Haematoxylin and eosin staining showing normal bone marrow structural destruction, with small remnants of adipose tissue and proliferating fibrous connective tissue and atypical lymphocyte infiltration. Immunohistochemical results: (B) MPO (–), CD235 (erythrocyte +), CD61 (–), CD3 (+), (C) CD20 (–), GranzB (scattered +), (D) ki-67 (hot spot LI about 20%+), CD56 (–), CD30 (–), ALK(ALK1), CD138 (–), EBER-CISH (–). Combined with clinical data, it was considered that non-Hodgkin's cytotoxic T-cell lymphoma involves bone marrow. (A–D, $\times 20$).

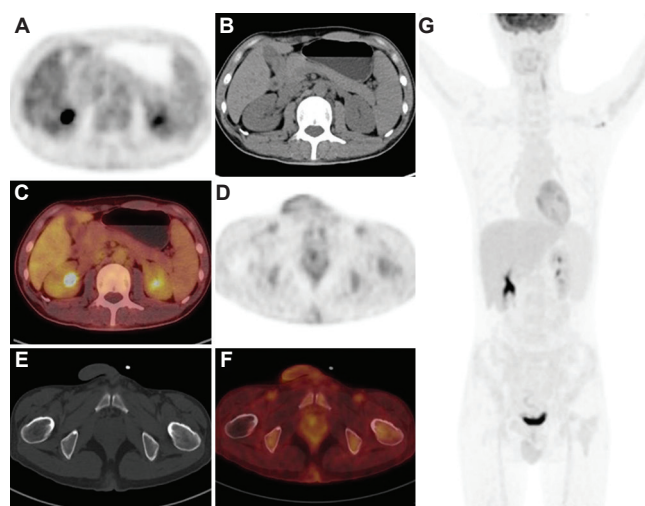


Fig. 4. After two cycles of chemotherapy, a repeat PET/CT showed that all previous hypermetabolic lesions disappeared. **Panel A–C** showed PET, CT, and PET/CT fusion images of both kidneys, respectively. **Panel D–F** showed PET, CT and PET/CT fusion images of the left femoral neck, respectively. (G) displayed MIP image of the whole body.

CT. Subsequently, non-Hodgkin's cytotoxic T-cell lymphoma was confirmed by immunohistochemistry (Fig. 3) through left femoral neck puncture biopsy under the guidance of PET/CT and the patient was transferred from the infectious diseases to the haematology department for treatment. After two cycles of chemotherapy, a repeat PET/CT revealed that the metabolic activity returned to the normal level with a SUV_{max} of 3.0 (Fig. 4).

Lymphoma can involve a variety of tissues and organs outside the lymph nodes. When there is no obvious morphological abnormality, traditional imaging may not pick up abnormal lesions. However, an ^{18}F -FDG PET/CT can be invaluable in diagnosing an occult malignancy and for subsequent evaluation for the remission of disease.

Acknowledgment: The authors would like to thank pathology expert Yu-fei Liu, haematology expert Jing-ming Guo and oncology expert Xin-hua Xu, The First Clinical Medical College of Three Gorges University, Yichang, China, for providing professional advice.

Conflicts of Interest: None.

Peng Wang^{1,2} & Bang-Ping Cui^{1,2,*}

¹Department of Infectious Diseases, The First Clinical Medical College of Three Gorges University & ²Department of Nuclear Medicine, Yichang Central People's Hospital, Yichang, Hubei, P.R. China

*For correspondence:
yccbp@126.com

Received April 28, 2019